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SUMMARY OF DATA ON SUGARS

Abstract. The term "sugar" refers to a variety of different chemical entities, including sucrose, glucose, fructose, corn syrups, honey, dextrin, and lactose. These products are ubiquitous components of food products. They are used in the manufacture of cigarettes to adjust the pH of smoke, thereby reducing irritation and mellowing the taste. Sugars are approved for cigarette use in Great Britain and Germany.

Sugars have been the subject of extensive toxicological testing, which has generally indicated no adverse health effects other than dental caries. Isolated studies have produced results that were of concern, but these have generally not been replicated or used sugar concentrations well in excess of typical human exposure levels.

Studies have shown that sugars pyrolyze in cigarettes, and only a small percentage of sugars appear intact in the smoke. A wide range of pyrolysis products are formed. Research on the toxicological effects of sugar pyrolyzates has been equivocal. Skin-painting studies indicate that, at low concentrations, the presence of sugars in the cigarette does not affect the tumorigenicity of cigarette smoke condensate, but there may be some effect at higher levels. Sugars appear to decrease the mutagenicity of condensate.

Background. In a broad sense, the term "sugar" refers to a group of simple sugars, the monosaccharides, and the multi-unit di-, tri-, and tetrasaccharides. The term oligosaccharide is reserved for the complex or compound sugars generally composed of two to four units. Sugars are classified as simple carbohydrates, as distinguished from cellulose and starch, and are characterized by their varying degree of sweetness, water solubility, insolubility in ether and absolute alcohol, ability in aqueous solution to rotate a plane of polarized light, and similarity in chemical structure (Leach, 1920).

The common sweetener sugar consists essentially of pure sucrose (CAS No. 57-50-1), which is a colorless or white